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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,349	04/10/2007	Ayala Barak	BARAK=7	2789
1444 7590 09/10/2010 BROWDY AND NEIMARK, P.L.L.C. 624 NINTH STREET, NW SUITE 300 WASHINGTON, DC 20001-5303			EXAMINER SCHLENTZ, NATHAN W	
			ART UNIT 1616	PAPER NUMBER
			MAIL DATE 09/10/2010	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/586,349	Applicant(s) BARAK, AYALA	
	Examiner Nathan W. Schlientz	Art Unit 1616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 95,97,99-103,105-119,122-125 and 127-137 is/are pending in the application.
- 4a) Of the above claim(s) 109,110,112-119,125,127 and 128 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 95,97,99-103,105-108,111,122-124 and 129-137 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>5/21/10</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of the Claims

Claims 95, 97, 99-103, 105-119, 122-125 and 127-137 are pending in the present application. However, claims 109, 110, 112-119, 125, 127 and 128 are withdrawn from further consideration as being drawn to non-elected subject matter. Therefore, claims 95, 97, 99-103, 105-108, 111, 122-124 and 129-137 are examined herein on the merits for patentability. No claim is allowed at this time.

Terminal Disclaimer

The terminal disclaimer filed on 6 July 2010 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of any patent granted on Application Number 11/056,405 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1,148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
1. Claims 95, 97, 99-103, 105-108, 111, 122-124 and 129-137 are rejected under 35 U.S.C. 103(a) as being unpatentable over Charles Henry (US 1,590,372) in view of Barak (US 5,976,386 and US 6,132,628).

Determination of the scope and content of the prior art

(MPEP 2141.01)

Charles Henry teaches preparation of germicides, sterilants and the like and to processes of applying such agents, more particularly to the sterilization of water, sewage and so forth (pg. 1, ln. 1-5). Charles Henry teaches producing "chloramines" in solution in a state of relatively high concentration by the interaction of aqueous solutions of chlorine and of ammonium salts (pg. 1, ln. 7-13, 27-34). Charles Henry teaches the salts of ammonium which could conveniently be used in practice include ammonium carbamate (pg. 2, ln. 123 to pg. 3, ln. 1). The reaction of aqueous solutions of chlorine and ammonium salts may be carried out with the chlorine and ammonium salt in the following ratios: to each molecule of chlorine in the solution 0.1 molecule to 8 molecules of a mono-ammonium salt may be present. This may be stated by saying that to every gram of chlorine in solution there may be from 0.025 up to 2 grams of the ammonium

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radical (NH_4). The actual optimum range of the ratio between the constituent materials is expressed by 0.28 up to 4 molecules of mono-ammonium salt to every molecule of chlorine present. This is equivalent to 1 gram of chlorine caused to react with any ammonium salt containing from 0.07 up to 1 gram of ammonium radical (NH_4) (pg. 1, ln. 42-59). Charles Henry teaches that the solution exerts a sterilizing action greatly in excess of that of a solution of elementary chlorine or hypochlorite of equivalent strength and its sterilizing action is not inhibited by the presence of organic matter which absorbs chlorine (pg. 3, ln. 22-34).

Ascertainment of the difference between the prior art and the claims

(MPEP 2141.02)

Charles Henry does not explicitly disclose combining ammonium carbamate with sodium hypochlorite, as instantly claimed. However, Charles Henry teaches that ammonium carbamate could conveniently be used as the ammonium salt in their invention, and it is combined with a chlorine. Charles Henry also teaches that the action of the combination is greater than that of elementary hypochlorite. Also, Barak teaches concentrated active biocidal ingredients formed by mixing an oxidant, preferably sodium hypochlorite or calcium hypochlorite, and an amine source, such as ammonium salts, which are suitable for treating waste water (col. 2, ln. 42-67; and col. 3, ln. 36-37). Barak also teaches that the diluted amine source is preferably equimolar to Cl_2 .

Also, Charles Henry does not explicitly disclose the pH of the aqueous solution to be 9.0 to 11.5 immediately prior being applied to the sewage, water, etc., as instantly claimed. However, Barak teaches that the concentrated active biocidal ingredient

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injected into the liquid (waste water) should have a pH greater than 7.0, preferably greater than 9.0, and should be injected at a rate to maintain in the concentrated active biocidal ingredient a stable pH of at least 7.0. The active biocidal ingredient is normally very non-stable, and upon decomposition there is a sharp decrease in pH. Accordingly, efficient production of the active biocidal ingredient maintains a stable pH of at least 7.0, preferably greater than 9.0. It delays the decomposition of this otherwise extremely non-stable product at least for 5 minutes and thereby prolongs its efficacy (col. 5, ln. 11-21).

Finding of *prima facie* obviousness

Rational and Motivation (MPEP 2142-43)

Therefore, it would have been *prima facie* obvious for one of ordinary skill in the art at the time of the invention to prepare the germicides, sterilants and the like for sterilization of water, sewage and so forth, wherein the ammonia employed is ammonium carbamate according to Charles Henry, and wherein the chlorine source is sodium hypochlorite, and the pH is greater than 7.0, preferably greater than 9.0, as reasonably taught by Barak. One of ordinary skill in the art would have had a reasonable expectation of success because Charles Henry teaches ammonium carbamate and chlorine as suitable for water treatment, and Barak teaches ammonium salts and sodium hypochlorite at a pH preferably greater than 9.0 for treatment of water.

Regarding the concentration of sodium hypochlorite immediately prior to mixing with the ammonium carbamate being not more than 24,000 ppm as total chlorine (claim 99), Barak teaches that the concentration of hypochlorite oxidant at $t = 0$ (i.e.,

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immediately prior to mixing) is not more than 24,000 ppm (for example, see Tables 1-5). Also, Barak teaches that the diluted oxidant has a concentration of 0.1-2%, expressed as Cl_2 (col. 3, ln. 1-2; and claim 19).

Regarding the concentration of ammonium carbamate in an aqueous solution being 0.5-60% w/v prior to mixing with the sodium hypochlorite (claim 100), Barak teaches that the concentration of amine salt is more preferably 2.5-30% (col. 2, lines 57-58; and claims 11-13). This is within Applicant's concentration of 0.5-60%.

Regarding said mixing takes place in a mixing chamber into and out of which there is a continuous flow of water during said mixing (claim 101), and said producing said oxidant in situ in a conduit (claims 106-108), Barak claims continuously mixing oxidant and amine source to produce the active biocidal ingredient and continuously injecting said active biocidal ingredient, as it is produced in situ in said conduit, directly from said conduit into the liquid being treated (Abstract; col. 1, ln. 46-67; col. 2, ln. 1-41; and claims 1 and 20-22).

Regarding the choice of medium being waste water or reclaimed waste water (claim 111), Barak teaches that the compositions are intended to treat liquid such as water in a cooling tower, waste water, or the like (col. 3, lines 36-40), and Charles Henry teaches sterilization of water, sewage and so forth (pg. 1, ln. 1-5).

Regarding the concentration of the biocide immediately prior to being applied to said medium is from 1000-12,000 ppm expressed as total chlorine (claims 122), and the concentration of the biocide in said medium, upon application of the biocide to said medium, being 0.5-300 ppm expressed as chlorine (claim 123), Barak teaches that the

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active biocidal ingredient produced in situ is injected into the liquid being treated preferably at a concentration of 0.5-300 ppm, more preferably 3-10 ppm, expressed as chlorine (col. 2, lines 46-49; and claims 8 and 9). The larger range is exactly the same as that of the claimed invention; one skilled in the art would readily be able to determine the concentration of biocide prior to being applied to said medium by routine experimentation, in order to arrive at the desired final concentration.

Regarding the biocidal efficacy within 1 hour of application to said medium (claim 124), the compositions of Barak demonstrate reductions in the number of microorganisms of greater than 50% within 1 hour (see Tables 6 and 7), and therefore are effective within 1 hour of application to the medium.

Regarding the inclusion of a bromide (claim 129), Barak teaches ammonium bromide as a suitable amine source and an active biocidal ingredient derived from ammonium bromide exhibited superior efficacy and faster rate of kill in basic media as compared to active biocidal ingredients derived from other amine sources (col. 3, ln. 19-22; and claim 1). Therefore, it would have been obvious to include ammonium bromide in the preparation of the active biocidal ingredient.

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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1. Claims 95, 97, 99-103, 105-108, 111, 122-124 and 129-137 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-22 of U.S. Patent No. 5,976,386 in view of Charles Henry (US 1,590,372). Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims are drawn to a method for controlling microbial or biofilm growth in a medium, the method comprising mixing an amine source and an aqueous solution of sodium hypochlorite oxidant to form a biocide. US '386 does not claim that the amine source is ammonium carbamate. However, Charles Henry teaches preparation of germicides, sterilants and the like and to processes of applying such agents, more particularly to the sterilization of water, sewage and so forth (pg. 1, ln. 1-5). Charles Henry teaches producing "chloramines" in solution in a state of relatively high concentration by the interaction of aqueous solutions of chlorine and of ammonium salts (pg. 1, ln. 7-13, 27-34). Charles Henry teaches the salts of ammonium which could conveniently be used in practice include ammonium carbamate (pg. 2, ln. 123 to pg. 3, ln. 1). Therefore, it would have been *prima facie* obvious for one of ordinary skill in the art to use ammonium carbamate as the amine source in US '386 since Charles Henry clearly teaches ammonium carbamate as a suitable ammonium salt for the same purpose as US '386. One of ordinary skill in the art would have a reasonable expectation of success in using ammonium carbamate as the ammonium salt since Charles Henry teaches using ammonium carbamate with a chlorine source for the same purpose, i.e. sterilization of waste water.

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2. Claims 95, 97, 99-103, 105-108, 111, 122-124 and 129-137 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-23 of U.S. Patent No. 6,132,628 in view of Charles Henry (US 1,590,372). Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims are drawn to a method for controlling microbial or biofilm growth in a medium, the method comprising mixing an ammonium salt and an aqueous solution of sodium hypochlorite oxidant to form a biocide. US '628 does not claim that the ammonium salt is ammonium carbamate. However, Charles Henry teaches preparation of germicides, sterilants and the like and to processes of applying such agents, more particularly to the sterilization of water, sewage and so forth (pg. 1, ln. 1-5). Charles Henry teaches producing "chloramines" in solution in a state of relatively high concentration by the interaction of aqueous solutions of chlorine and of ammonium salts (pg. 1, ln. 7-13, 27-34). Charles Henry teaches the salts of ammonium which could conveniently be used in practice include ammonium carbamate (pg. 2, ln. 123 to pg. 3, ln. 1). Therefore, it would have been *prima facie* obvious for one of ordinary skill in the art to use ammonium carbamate as the amine source in US '386 since Charles Henry clearly teaches ammonium carbamate as a suitable ammonium salt for the same purpose as US '386. One of ordinary skill in the art would have a reasonable expectation of success in using ammonium carbamate as the ammonium salt since Charles Henry teaches using ammonium carbamate with a chlorine source for the same purpose, i.e. sterilization of waste water.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan W. Schlientz whose telephone number is (571)272-9924. The examiner can normally be reached on 9:00 AM to 5:30 PM, Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann R. Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NWS

/John Pak/
Primary Examiner, Art Unit 1616